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December 2, 1950

SCIENCE NEWS LETTER

DEC 4 1950
DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE

4000 Feet Under the Sea

See Page 357

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PUBLIC HEALTH

Cream Repels Leeches

Cheap chemical substance, rubbed onto shoes and legs up to knees, saves soldiers in Far East from disabling wounds. Also repels mosquito.

➤ LAND-LEECHES, one of the serious plagues of Far Eastern warfare, are going to find the soldier of the future less tempting prey.

A cheap chemical substance, di-methyl phthalate, made up into a cream with white wax and arachis oil and applied to the shoes and exposed skin of persons venturing into leech country is sufficiently offensive to the leech to make it think twice before attacking its intended victim.

"A light covering of the cream to the footwear and to the skin of the leg as far as the knee sufficed to prevent attacks in country where without such aid bites could have been frequent," reports Dr. F. M. G. Stammers, (PARASITOLOGY). This British scientist compounded his repellent in London's St. Bartholomew's Hospital and then proved its usefulness in southeastern Ceylon's leech-infested jungles.

The land-leech is a particularly vicious and disabling pest of jungle warfare. It attaches itself to the skin by the hundreds, sucks large quantities of blood and leaves a wound from which blood continues to ooze for a long time after the engorged leech itself has dropped off. These wounds also frequently become the seats of severe infections.

Found in Japan, China, Burma, Malaya, the East Indies, India and Ceylon, in some areas they number as high as 50 to the square yard. Only about an inch long and not thicker than a matchstick when hungry, the leech can worm its soft body through the eyelets of a boot and even between the mesh of a closely woven stocking, so that clothing itself is no protection against it.

Possibly even more effective than dimethyl phthalate, according to Dr. Stammers' findings, is the chemical hydroxycitronellal, but it is much more expensive than the former chemical and therefore not so practical for general use on large numbers of fighting troops. Both chemicals have the added advantage of being repellent to that other jungle pest: the mosquito.

In the course of his studies on the land-leech Dr. Stammers made some interesting observations on the prey-finding tactics of the parasite. He found that contact with a warm object brought the leech into a sucking position and that it would follow a warm current of air, showing that the temperature of the body is probably one of the signals used by the leech to show it when to attack.

He also found that a 50% reduction in the light shining on the leech brought it to position for an attack, so that it seems likely a person's own shadow is another signal to the leech that a potential victim is approaching.

Skin itself, regardless of its temperature, is attractive to leeches, but Dr. Stammers was not able to extract from skin the specific chemical which attracted the leech.

Science News Letter, December 2, 1950

RESOURCES

Critical Shortage Relieved

Process known as "platforming" can eliminate danger of shortage of benzene, needed for synthetic rubber, nylon, detergents and other uses.

➤ DANGER of a shortage of benzene, the extremely critical chemical that is already in tight supply, can be eliminated "quickly, permanently and economically."

Dr. Gustav Egloff, director of research for Universal Oil Products Co. in Chicago, states that a process, known as platforming, discovered by Dr. Vladimir Haensel and already placed in commercial operation, can relieve the present shortage.

In all-out war mobilization, increased use of benzene for synthetic rubber and aviation gas would mean cuts in the production of plastics, nylon, weed killers, detergents, insecticides and many other essential military and civilian products.

For some time Universal has been studying the production of benzene through platforming. The term "platforming" represents the reforming, or changing, of gasolines in the presence of hydrogen using a platinum catalyst. This process, now being used to improve the quality of motor gasoline, will successfully produce benzene in practically unlimited quantities, he stated.

Dr. Egloff emphasized that this is a "most important finding and one that will have a significant bearing on the nation's ability to produce benzene in adequate quantities so that all military needs can be met without affecting the production of civilian products requiring large amounts of this chemical."

Although approximately 170,000,000 gallons of benzene will be produced during 1950, all-out war would require at least twice this amount, a now unobtainable figure, Dr. Egloff said.

In addition to producing benzene, Universal has discovered that platforming can be used to make large quantities of toluene, basic chemical in the production of highly explosive TNT as well as an important component in fighting-grade aviation gas.

Science News Letter, December 2, 1950

RADIO

Device Turns Off Radio When Speaking Begins

➤ A DEVICE that will automatically turn off your radio when speaking interrrupts music was described to members of the Acoustical Society of America meeting in Cambridge, Mass.

Its most obvious use, said Dr. R. Clark Jones of the Polaroid Corporation, who worked out the details of the device, would be by those music lovers who dislike having music programs interrupted by commercials. It might also be used by hotels or restaurants to obtain suitable background music, free from speech, directly from radios, thus supplementing wired music services.

Dr. Jones demonstrated how the small four-tube device works to the scientists. It silenced the radio after one or two syllables of speech. The radio then remained silent until about one second after the voice had stopped. Both switch-out and turning on again are entirely automatic.

In presenting the development, Dr. Jones suggested that its real importance is "the light it may shed on our knowledge of the nature of speech and music and of the working of the human brain."

The device works because of a fundamental difference between music and speech. Speech is full of extremely short pauses, such as the one between "s" and "t" in the word "stay." These pauses occur much more frequently in speech than in music, and are also much more abrupt. What the instrument does is to "listen" for these pauses, measure their abruptness, remember how many pauses there have been during the preceding few seconds and then make a "decision."

The device would not represent a threat to radio advertising, Dr. Jones declared, since it would probably cost $15 or $20 if commercially available and "anyone who dislikes radio commercials that much can scarcely be considered a profitable part of the radio audience."

When faced with patter songs, such as those of Gilbert and Sullivan, or with singing commercials, the device has difficulty in making a decision as to whether music or speech is playing—just as some people do.

Science News Letter, December 2, 1950

MEDICINE

Jaundice Danger Averted

By keeping plasma at room temperatures or warmer, instead of in the deep-freeze, the virus believed to be cause of jaundice would not survive.

➤ DANGER of jaundice being spread through blood plasma might be averted by changing the method of storing the plasma.

Studies suggesting this are reported by Dr. J. Garrott Allen and associates of the surgical department of the University of Chicago School of Medicine. (JOURNAL, AMERICAN MEDICAL ASSOCIATION, Nov. 25).

Instead of keeping it at refrigerator or deep-freeze temperatures, it might be better to keep the plasma at room temperature or warmer.

Refrigeration, freezing and lyophilization, the methods used almost exclusively for preserving plasma, are also the best methods for preserving viruses, the Chicago scientists point out. A virus is thought to be the cause of the kind of jaundice, sometimes fatal, which has come from transfusion of pooled plasma in some cases.

The reason other disease viruses are not preserved and transmitted along with the jaundice virus, the scientists explain, is that people with other disease viruses in their blood would be sick and could not give blood to a blood bank. The jaundice virus has a long incubation period, so that a person might have it in his blood for weeks without being sick.

The University of Chicago Clinics began storing plasma from their blood bank at room temperature in 1942 because refrigeration facilities were not available. The practice was continued because it was found satisfactory. Of 864 patients given plasma stored at high room temperature for three to 12 months, only three are known to have developed jaundice. These patients also were given whole blood and the Chicago doctors think the blood was probably the source of their jaundice.

Working with Dr. Allen on this study were Miss Carolyn Sykes, R.N., and Drs. Daniel M. Enerson, Peter V. Moulder. Richard M. Elghammer, Burton J. Grossman, Charles L. McKeen and Nicholas J. Galluzzi.

Science News Letter, December 2, 1950

PHYSICS

Zirconium Is Wanted

Metal, most familiar in mixtures for semi-precious stones, now needed in ton lots for building atomic "ovens." Has low neutron capture cross section.

➤ ZIRCONIUM, a metal that is most familiarly known in mixtures for the semi-precious gem stones, zircons, is being used in building our newest atomic "furnaces."

The Atomic Energy Commission would like to get this metal in ton lots for building atomic "ovens," but present production is only about 1,200 pounds per week. Even this is a big improvement, both in quantity and purity of the metal, over production before the metal had proved its worth as a structural material for atomic furnaces.

Only recently have methods for producing this metal in quantity been perfected. Melted zirconium, like titanium, its closest chemical relative, either reacts with or dissolves many of the usual materials used for melting vessels. Thus to separate it in pure form from the other ores with which it is found required great ingenuity for which American engineers can take credit.

The U. S. Bureau of Mines obtains the metal by reducing zirconium chloride with molten magnesium.

Highly resistant to many acids and with a melting point above 3400 degrees Fahrenheit, the metal would seem a natural for atomic pile use, but was not taken seriously because of the difficulty of handling it, separating it in a pure form.

Materials used in atomic furnaces cannot have any special liking for the neutrons that keep the chain reaction going. Steel, for instance, sops up neutrons although it is otherwise a good structural material. Zirconium, however, has a "low neutron capture cross section," as the liking for neutrons is called by the physicists, and it, or an alloy of it, is therefore being used for building atomic furnaces.

The first sizable production of zirconium has started in a new mill at the Northwest Electro Development Laboratory of the Bureau of Mines at Albany, Ore.

Zirconium has previously been used in small quantities in flashlight bulbs, and radio tubes as well as in some alloys of steel and copper.

Although the metal is well distributed in the earth's crust, the U. S. is dependent upon foreign supply, principally Australia, for most of its zirconium ore and concentrates. How much we are adding to our stockpile of war strategic materials is classified information.

In powder form, zirconium is black, looking much like charcoal dust. When melted, the metal is steel-gray. It can be polished to make a lustrous metallic mirror.

When AEC demands for this metal are satisfied, industry will get a crack at it, taking advantage not only of its corrosion-resistant properties, but also its alloying qualities.

Science News Letter, December 2, 1950

ENGINEERING

Lamp Promises Safer Flying and Better TV

➤ SAFER flying and better television pictures are promised with a new lamp developed in Bloomfield, N. J., by Westinghouse that is said to be the brightest lamp now available for the small current used.

Its flaming heart is an arc stream of mercury vapor that is one-eighth as bright as the sun although only one-third of an inch long. In aviation, the bright lamp is being used to shoot a narrow beam of light into the sky in order to measure cloud ceilings. The height of the cloud is recorded automatically by an instrument whose operation is based on the time required for the light to reach the cloud and return.

The value of the light for television is in projectors that televise motion pictures. This "short arc" lamp, which operates on 800 watts, produces a clear picture in black and white with excellent contrast and true gray shadings. Its expected life of 500 hours is longer than other available light sources.

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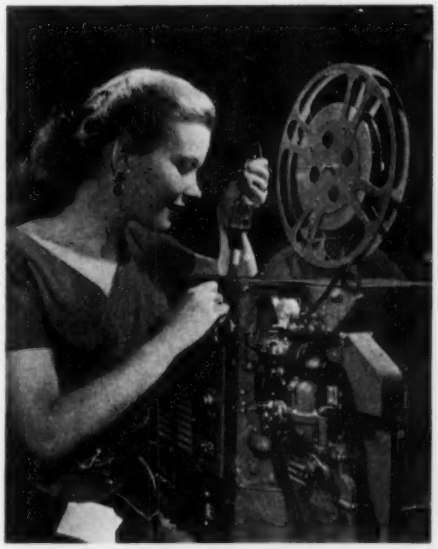

SHARPENS IMAGE—A new lamp one-eighth as bright as the sun helps make televised motion pictures look like live telecasts.

ASTRONOMY

Dane Heads McDonald

Appointment announced of internationally known Bengt Stromgren as director also of University of Chicago's Yerkes Observatory.

➤ DOCTOR Bengt Stromgren, internationally known Danish astronomer, will be director of two American observatories beginning Jan. 1, 1951.

The appointment, announced by Chancellor Robert Hutchins of the University of Chicago, marks the first time that the director of a European observatory has been named director of an American observatory.

Dr. Stromgren will be director of the University of Chicago's Yerkes Observatory at Williams Bay, Wis., and of McDonald Observatory, the University of Texas-University of Chicago cooperatively operated observatory at Fort Davis, Tex. He will also be professor of astronomy and chairman of the department of astronomy at the University of Chicago.

The 42-year-old astrophysicist is distinguished for his research and theories about what the stars are made of and what occupies the space between them. Dr. Stromgren has concluded that space and the stars are much the same except that the matter in the stars is close together.

A chunk of interstellar space the size of a big room contains about 10,000,000 atoms of hydrogen, 60 atoms of sodium, 100 atoms of calcium, four of potassium and two of titanium, according to Dr. Stromgren's calculations.

This year Dr. Stromgren received the $5,000 Augustinus prize for his accomplishments in astronomy and astrophysics. Director of Copenhagen University Observatory and professor of astronomy there, he succeeds Dr. Otto Struve at the University of Chicago. Dr. Struve is now at the University of California.

Dr. Elis Stromgren, Dr. Bengt Stromgren's father, was the director of the Royal Observatory in Copenhagen from 1907 to 1940 until he was succeeded by his son.

Science News Letter, December 2, 1950

MEDICINE

Seasickness Remedy Good for Ear Trouble

➤ PATIENTS who get dizzy and suffer nausea and vomiting because of inner ear trouble, called labyrinthitis, can be relieved by dramamine, the modern remedy for and preventive of motion sickness.

The results are so good that the drug should be given to all patients with disturbance of balance before resorting to a nerve-cutting operation, alcohol injection or other treatment, in the opinion of Dr. Leslie N. Gay, associate professor of medicine at the Johns Hopkins University School of Medicine.

Discovery of the effectiveness of dramamine in stopping or preventing air, car and seasickness was made by Dr. Gay and Dr. Paul E. Carliner just two years ago. Its effect in inner ear trouble is now reported by Dr. Gay to the Association of Military Surgeons.

The drug was given to six patients within three weeks after the dizziness, nausea and vomiting started. Regardless of the cause of these symptoms, the acute disturbance subsided within one-half hour. In another group of 41 patients who had suffered from the same symptoms for from two months to 25 years all were either completely cured or had only infrequent and minor attacks so long as they continued to take dramamine. But 16 patients with the same symptoms did not get relief with the drug, and five got worse. The failures are unexplained.

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OCEANOGRAPHY

Mountains Under Sea

Great range 1,000 miles long and up to 14,000 feet in height discovered under the Pacific. Most peaks are flat on top as if eroded by sea.

See Front Cover

➤ DISCOVERY in the central Pacific of a tremendous underwater mountain range—1,000 miles long, 100 miles wide and up to 14,000 feet in height—was announced following a joint University of California-U. S. Navy expedition which returned recently.

The submerged mountain range, which has been named the "Mid-Pacific Mountains," stretches all the way from Wake Island to Necker Island near the Hawaiian group.

Hydrographic charts had previously indicated isolated shoal points in this area, but the findings of the expedition proved conclusively that these were not isolated peaks but the summits of a long, narrow, virtually continuous mountain range as mighty as the Sierra Nevada.

Most of these sea mounts were flat on top—as if eroded by wave action in shallow water and then sunk below the surface. Clam, snail and sea urchin shells were dredged from a submerged mountain top that has now sunk to the 6,000 foot level.

The photograph on the front cover of this week's SCIENCE NEWS LETTER was taken 4,500 feet below the surface of the Pacific on the peak of Sylvania Seamount, near Bikini Atoll. The objects shown are probably fossil coral heads coated with manganese dioxide. At the upper right can be seen ripple marks made by underwater currents.

Entitled "Operation Midpac," the expedition was sponsored by the University of California's Institute of Geophysics and the Office of Naval Research and the Bureau of Ships of the U. S. Navy, and carried out by the University of California, Scripps Institution of Oceanography and the U. S. Navy Electronics Laboratory at San Diego.

Led by Dr. Roger Revelle, acting director of the Scripps Institution, the expedition consisted of two vessels, 85 crew members and 30 scientists from the Scripps Institution, U. C. L. A., U. S. C., Stanford, the U. S. Geological Survey and the Navy. The two ships were the *Horizon*, a 143-foot converted Navy tug which now belongs to the Scripps Institution, and the EPCE(R)-857, a 220-foot research vessel assigned to the Navy Electronics Laboratory.

The two vessels set out from San Diego for the central Pacific on July 27 and completed their 96-day, 27,000-mile trip on Nov. 1.

Chief mission of the expedition was to explore the vast, watery frontier which comprises the floor of the Pacific Ocean, and about which comparatively little is known.

Scientists had previously believed that the floor of the Pacific had remained relatively stable for hundreds of millions of years. But the mass of evidence brought back by "Operation Midpac" shows that in recent geologic times it was the scene of violent movement and that there have been great changes in depth.

Dr. Revelle points out that the underwater sea mounts—the gigantic "Mid-Pacific Mountains"—were thrust up and afterwards sunk. They have sunk in such recent geologic times that the submergence is thought to be due primarily to the sinking of the sea floor itself. Great quantities of ash were also brought up, indicating widespread and violent volcanic activity.

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GEOLOGY

Largest Meteor Crater

➤ NORTHERN Canada's huge meteor crater, if meteor crater it is, was found this summer to be seven times larger than Canyon Diablo in Arizona and 17 times larger than Australia's Wolf Creek Crater.

All available evidence seems to indicate that the two-mile-wide lake is the largest meteor hole in the world, Dr. V. Ben Meen of the University of Toronto told the Geological Society of America meeting in Washington.

Dr. Meen and the crater's discoverer, a prospector named Fred W. Chubb, flew to the Ungava Peninsula on the eastern shore of Hudson Bay this summer. The geologist is director of the Royal Ontario Museum of Geology and Mineralogy in Toronto.

In a barren land where no tree or shrub can grow, a granite rim was found "which seemed to represent a mass of granite bedrock which has been fractured by a tremendous explosion and lifted bodily to its present position," Dr. Meen said. Yet there is a complete absence of lava or any other evidence of a volcanic eruption.

Assuming a depth of 1,000 feet for the crater, he said, the amount of granite removed from the center by the force of the explosion is figured at more than 5,000,000,000 tons.

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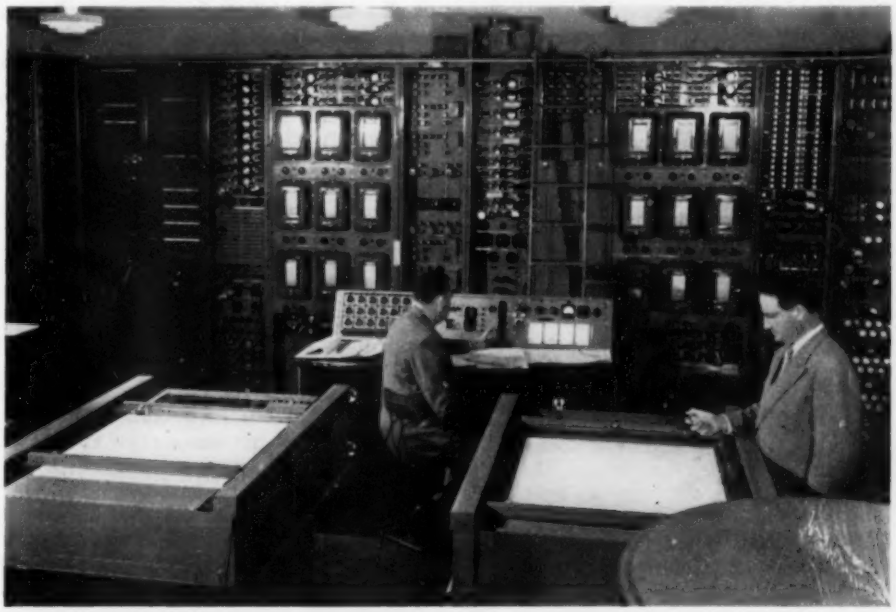

TYPHOON—A new and accurate computer built to evaluate the performance of guided missiles, ships, airplanes and submarines. It was developed by engineers of RCA under contract with the Special Devices Center of the U. S. Navy.

GEOLOGY

Last Glacier Melted Only 11,000 Years Ago

➤ RADIOCARBON, the atomic calendar, has revealed that the last great ice cap to cover North America was much more recent than geologists have suspected..

An ice sheet which reached as far south as Buffalo, Saginaw, Milwaukee and Minneapolis began to melt only about 11,000 years ago, Dr. Richard F. Flint of Yale University reported to the Geological Society of America in Washington.

It had been previously estimated that glacier ice stood along this line no less than 25,000 years ago.

The new date was obtained by measuring the decay of carbon 14, a radioactive isotope, in a layer of peat overlooking Lake Michigan in northern Wisconsin. By use of a radiation counter, the time at which the peat was laid down could be estimated with possible error of only a few hundred years.

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MEDICINE

TB Remedy Tibione Promising for Leprosy

➤ TIBIONE, a chemical developed in Germany as a tuberculosis remedy, is the most promising new drug for leprosy at present, Dr. Paul T. Erickson of the U. S. Public Health Service reported at the New York Academy of Sciences conference on leprosy.

One of the so-called mold remedies, aureomycin, and para-aminosalicylic acid, called PAS for short, also have shown early good effects on leprosy sores, Dr. Erickson said. Cortisone, the anti-arthritis drug, also may be helpful in some phases of the disease, it appears from limited experience with it.

The most important single advance in treatment of leprosy occurred in 1941. That, Dr. Erickson said, was the introduction of sulfone drugs. The most recent of these is promacetin. These drugs have largely replaced chaulmoogra oil. With the mold remedies and measures for improving the patient's resistance and caring for complications, the sulfones have "materially altered the outlook for the leprosy patient and the curability of the disease."

A new method of testing the effectiveness of leprosy drugs in one-twelfth the time previously needed was reported by Drs. E. Grunberg and R. J. Schnitzer of Hoffmann-La Roche laboratories, Nutley, N. J. The method makes use of mice as testing animals.

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Although attempts began about 1850 to produce *titanium* metal from its plentiful ores, it is only in the past decade or so that commercial production methods have been developed.

RESOURCES

Soviet Uses Synthetics

Lacking petroleum supplies, Russia depends on coal and oil shale to produce additional supplies. Would need new source in case of war.

➤ TO COMPENSATE for their lack of petroleum supplies, Russia and her satellite countries use the expensive processes of making liquid fuels from coal and oil shale to produce additional supplies of oil, according to Dr. Gustav Egloff, Universal Oil Products Company, Chicago.

This statement was made in Los Angeles at the meeting of the American Petroleum Institute attended by oil men from all parts of the country. How much liquid fuel is being produced by Soviet countries is not known, he stated.

Current plans in eastern Germany call for the production of 20,000 barrels a day of automotive fuels from lignite, he said. In Czechoslovakia a coal-hydrogenation plant is available for producing 30,000 barrels of gasoline a day. It seems reasonable to estimate that at least 100,000 barrels a day of synthetic liquid fuels from coal and oil shale are being produced in Russia and controlled countries, he said.

The combined total of crude oil and synthetic oils produced in the Soviet area amounts to about 1,000,000 barrels a day, he stated. This is less than 10% of the total world production.

Total world production of crude oil is about 10,500,000 barrels a day. Of this, the United States produces approximately 52%; the Middle East 17%; Venezuela 14.5%; and Russia and her satellites only 8%. The strategic oil supplies of the world are located in two principal areas, fields bordering the Gulf of Mexico and the Caribbean Sea and those of the Middle East including Iraq, Iran and Arabia.

In any long conflict Russia would have to get more oil, and the Middle East stands as the most obvious point to seize because of its proximity. Control would not only divert supplies to Russia and triple her available resources, but also would cut off this source of oil from western European countries, leaving them more prone to invasion. Russia is reported to be fomenting border incidents and tribal wars in Iran, he declared, with the evident aim of developing a weak spot which will be ripe for invasion.

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RESOURCES

U.S. Needs Synthetic Fuel

If United States is to be independent of foreign countries in the future, we must rely on synthetics to supplement domestic petroleum.

➤ BARRING unexpected developments in atomic or solar energy, a time will come when America will have to rely on synthetic liquid fuels and imports to supplement domestic petroleum, Dr. James Boyd, director of the U. S. Bureau of Mines, told the American Petroleum Institute.

Of these two sources only synthetics can offer an assured supply from known resources within our own borders, he said. This supply is not subject to vulnerable sea lanes, foreign expropriation or exorbitant taxes and concession fees.

"For some years new oil fields discovered in the United States have been decreasing in size and importance," he declared. "The opposite is true of discoveries made abroad. Whereas the average new field found in this country rarely exceeds 2,000,000 barrels of recoverable oil, the 300 fields discovered abroad during the two decades prior to 1943 have an estimated ultimate yield averaging about 100,000,000 barrels each.

"Our potential oil land, of course, has been far more intensely explored. We have drilled one wildcat well for every 12 square miles of average land area here, in contrast to one drilled for every 480 square miles abroad. We now have less than one-third of the proved oil reserves of the world, and the land area of Russia alone may be a greater potential source of new oil than continental United States."

Work in the United States in making synthetic liquid fuels from coal, oil shale and natural gas, both by the government and private industry, was reviewed.

Gasoline and other synthetic fuels will soon be in production commercially by a private plant in Texas which will use natural gas as a raw material. Research and development show that high-quality liquid fuels can be obtained economically from coal and oil shale. Both of these are available in vast quantities within this nation's borders. Improved processes are lowering the cost.

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PHYSIOLOGY

Vitamin Against Cold

Experiments with rats indicate that vitamin B_{12} added to diet enabled animals to withstand intense cold without retarding their growth and development.

➤ ONE of the new B vitamins, B_{12} by name, may help our fighting forces withstand long periods in the cold, it appears from studies by B. H. Ershoff and H. B. McWilliams of the Emory W. Thurston Laboratories at Los Angeles.

The studies were made in cooperation with the Quartermaster Food and Container Institute for the Armed Forces.

Rats, not men, were the subjects of the experiments. When young rats were kept at room temperature and fed a purified ration, known as diet A, containing the B vitamins in synthetic form only, they grew and developed satisfactorily. But when the animals were kept continuously in a walk-in refrigerator at a temperature just above freezing, their growth and development on this diet were markedly retarded.

Adding dried whole liver, or liver extract, or a water-insoluble liver residue to the diets of the rats in the cold room resulted in a marked increase in weight and development. A supplement of the known B vitamins was equally effective.

The effects of these diet supplements in protecting against the prolonged cold were due, at least in part, to their vitamin B_{12} content, the scientists think.

The studies were reported in the PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE (October).

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BALLISTICS

Pix of Deep Sea Explosions

Better torpedoes, mines and underwater bombs may result from use of special motion picture camera which takes 20,000 pictures per second.

➤ WHAT happens when explosive weapons detonate deep down in the ocean is now being studied with the use of a special motion picture camera which takes 20,000 pictures per second. Better torpedoes, sea mines and underwater bombs may result from the use of the equipment.

The methods and equipment used to obtain these photographs were developed at the Naval Ordnance Laboratory, Silver Spring, Md. They are described by Dr. Paul M. Fye of the Laboratory. (JOURNAL OF THE SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS, October).

The cameras used are modified commercial types shock-mounted in heavy, watertight cases. A camera for depths up to two miles has a spherical casing with an inside diameter of 22 inches and a wall 1.25 inches thick. The camera lens faces a one-inch thick window, an inch and a quarter in diameter.

In the camera, the image is focused on a spinning mirror which has the focal axis of the taking lens system for its axis of rotation. One hundred framing lenses provide 100 pictures. With the mirror revolving at 18,000 revolutions per minute, 100 pictures can be taken at the rate of 30,000 frames per second. Such frame speeds are required, according to Dr. Fye, for very deep photography, where oscillations of the explosion bubble are much more rapid than in shallow water.

The method is primarily for use in recording the oscillations of explosion bubbles. These are gas globes that are formed by the hot, expanded gaseous products of explosions. In testing the camera, explosive charges from one ounce up to 300 pounds were used. The camera is for use in gaining new knowledge of the behavior, effectiveness, and design requirements of various types of underwater explosive weapons.

Science News Letter, December 2, 1950

INVENTION

Conquest of Snoring Claimed in Patent

➤ WIVES of snorers take notice. The U. S. Government has just issued a patent on a device to silence the noises that come from the open-mouth sleeper.

It is called a device to prevent mouth-breathing, but reading between the lines its real purpose is revealed. Incidentally, it could be worn by a woman as well as by a man, being conformable to chest and chin.

This plastic or metal device is worn covering the throat extending from chest to chin. Held in place by a strap around the neck it prevents the lower jaw from sagging and holds the mouth closed. The chin support is cupped so that the head can not be turned.

The device can be made to fit the "different anatomical proportions" of different users. The inventor is Cyrus H. Johnston of Richmond, Mo. Patent 2,528,370 was issued to him.

Science News Letter, December 2, 1950

NUTRITION

Search for Extras For Maternal Diets

➤ RATS are being milked by research scientists in the hope of finding diet extras needed by expectant and nursing mothers.

Rat mammas do better and so do their young when the mammas are given doses of one of the new vitamins, B_{12}, and are fed beef and casein, the protein in milk and cheese. This much has already been discovered from the rat milking study by Miss Marian Meyer, biochemist working under the direction of Dr. Conrad A. Elvehjem.

But while B_{12} peps up reproduction and nursing in beef and casein-fed rats the University of Wisconsin scientists suspect there are other still unknown diet factors needed for reproduction and lactation.

Search for these extras continues. Meanwhile, human mothers can be told that high quantities of all known B vitamins and a good source of proteins will help keep them in top condition. The diet supplying these will be advised by their own physicians.

Science News Letter, December 2, 1950

MILKING RATS — University of Wisconsin Biochemist Marian Meyer is milking the rat in her hand. The rats are milked in a study to find out what should be added to the diet of nursing mothers to make up deficiencies.

METEOROLOGY

Colder in North; Warmer in South

➤ OLD Man Winter started out by dealing out for the period Nov. 15 to Dec. 15 warmer than normal weather where we do not need it and weather that is colder than normal where it certainly is not welcome.

The Extended Forecast Section of the U. S. Weather Bureau predicts that, until Dec. 15, temperatures will average above normal in most of the southern and western parts of the country, with California set to be most above normal. On the other hand, the northern Great Lakes region will be suffering under colder than normal weather for this period.

The rest of the nation—a broad band from the Pacific to the Atlantic excluding the regions mentioned above—will experience about average temperatures until Dec. 15.

More snow and rain than normal is predicted for the northern border states and also in Oregon and northern California. This continues a pattern first predicted earlier. But the southern plains, the southwest and Florida can expect less precipitation than they usually receive. The rest of the nation will get about the same amount of snow and rain as usual.

Science News Letter, December 2, 1950

ICHNOLOGY

Tell Ancient Reptiles By Footprints

➤ ICHNOLOGISTS, the footprint detectives of science, are using rubber feet built from fossils to answer their usual question, "Where were you, you reptile, 250,000,000 years ago?"

The answer, of course, is "Crawling through this here mud-hole." But scientists want to know much more: what sort of creature left the fossil footprints they dig up, how broad was it between the shoulders, did it travel with a gallop or a shuffle?

To answer such questions as these, Dr. Donald Baird of the University of Cincinnati Museum told the Geological Society of America in Washington, ichnologists now can rebuild an ancient foot in rubber merely from its print preserved in rock. From the foot, oftentimes the animal can be reconstructed.

Latex moldings are taken from footprints laid down in the dim geologic age when coal was being formed. They are proving valuable clues to the animal life of prehistoric America, Dr. Baird said.

Many different kinds of primitive amphibians and reptiles crawled through swamps and mud-flats. Although their bones may have vanished, often their footprints remain, preserved in sedimentary rocks.

From a well-preserved track, scientists can deduce a great deal about the animal, his body proportions, weight and size. In some cases, Dr. Baird said, the footprints are the only clue to some bizarre reptile which long ago vanished from the earth.

Science News Letter, December 2, 1950

PHYSIOLOGY

Iron in Blood Changes During Day

➤ THE AMOUNT of iron in your blood plasma normally undergoes a regular day and night variation, falling from a high point in the morning to a low one in the evening, scientists at the University of Utah College of Medicine have found.

The mean level of iron in blood plasma was about 66% at 5 p.m. and had risen to about 148% at 9 a.m., the scientists found in tests made on seven healthy men. Samples of a couple of teaspoons of blood were taken from these men at intervals of two to four hours throughout the 24 hours. The same sampling and testing was done on another 12 healthy men, starting at 9 a.m. The results were approximately the same, showing that the change through the day was not due to the bleeding.

The daily rhythm of blood plasma iron is apparently related to activity and sleep. Two Scandinavian scientists found that it is shifted in night workers, with the plasma iron levels highest in the afternoon or evening after waking and the lowest in the morning at the end of the night shift of work.

In a group of five normal persons who were leading irregular hours of activity and sleep, there was no definite diurnal cycle, the Utah scientists found.

So far, they do not know of any explanation for this variation in blood plasma iron level.

Details of the study, by Drs. L. D. Hamilton, C. J. Gubler, G. E. Cartwright and M. M. Wintrobe, are reported in the PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE. (October)

Science News Letter, December 2, 1950

PLANT PATHOLOGY

Japanese Pest Turning Evergreens Yellow

➤ NEW YORK commuters whose evergreen landscaping has been hit by a sickly yellow scourge are victims of a new U. S. plant pest.

A black, lacy-winged bug from Japan has popped up mysteriously in Westchester County and southwestern Connecticut, Dr. Stanley W. Bromley of the Bartlett Tree Research Laboratories reported.

The lace bug was identified as Japanese by Dr. Norman Bailey of Boston University. But how it got here is a mystery.

Science News Letter, December 2, 1950

IN SCIEN

AERONAUTICS

Pest-Control Aircraft Will Be Needed

➤ MORE planes will be needed next year to help farmers produce bigger crops, it was indicated by officials of the U. S. Civil Aeronautics Administration. Their great use is in pest control.

Aviators play an important part in modern farming by spreading pest-killing dusts and sprays from the air on many of the major crops and on forest trees. They also distribute seed and fertilizer to rice fields and burned-over areas following forest fires. Some 5,000 airplanes and helicopters are now used for these purposes.

More aircraft to aid farming will be needed next year because of increased acreages which will follow the action of the government in removing production controls on all crops except peanuts and tobacco. With the growing use of chemicals to kill weeds, more use of planes in weed-killing is expected. In addition to weed-killing chemicals, others are now coming into use to destroy woody plants such as scrub trees on pasture land.

Science News Letter, December 2, 1950

GEOLOGY

Dry Texas Was Once Green with Forests

➤ A SEA once covered the now dry desert of West Texas and a mountain range once extended across the mouth of the Gulf of St. Lawrence.

This ancient geography was reported in Washington to the Geological Society of America meeting.

Dr. C. C. Albritton of Southern Methodist University told how, during the period between a drought a hundred million years ago and the present dry spell, the sagebrush country around El Paso was green with forests and even flooded by the sea. He made his discovery on long-ago climates while mapping along the Mexican border for the U. S. Geological Survey.

From studies of the rocks and fossils of Cape Breton Island, Nova Scotia, Dr. R. D. Hutchinson of the Geological Survey of Canada drew his conclusion that a mountain range once stood across the mouth of the Gulf of St. Lawrence. This long, narrow range of low mountains was separated by two seas, one of which extended in a southwestward direction along what are now the mountains of western New England.

Science News Letter, December 2, 1950

ENCE FIELDS

VETERINARY MEDICINE

Too Much Excitement Can Blind Your Dog

➤ YOUR dog can go blind from too much excitement, a veterinarian of Colorado A. & M. College has reported.

A serious eye disease known as glaucoma can be caused by emotional upsets in dogs, Dr. R. H. Jourdan writes. (JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.)

The ailment builds up fluids in the eye, hardening the eyeball and sometimes causing blindness. Dr. Jourdan has found that this condition is much more common in highly excitable dogs. It may be brought on, he says, by no more than "a very exciting weekend."

Enforced rest may forestall the disease. But dogs that cannot take it easy may work themselves into such a nervous condition that glaucoma results, the veterinarian found.

Science News Letter, December 2, 1950

ENGINEERING

Pitting Chief Hazard To Steel Ship Hulls

➤ THE FORMATION of pits in steel in sea water, not general corrosion of the entire hull of a steel vessel, is an important problem to ship operators. The rate at which steel under sea water wastes away over its entire surface is low. Pitting, however, may cause serious trouble in a relatively short period.

If it were not for this pitting tendency of steel, it would be hardly necessary to paint and protect the underwater body of a ship, the Society of Naval Architects and Marine Engineers was told by Paul Ffield, of the Bethlehem Steel Company, Quincy, Mass. The average rate at which the steel is rusted away over its entire surface is less than an eighth of an inch in 20 years, he said.

Pitting is a natural tendency of steel, and the rate of attack at the pits is five to ten times greater than the general corrosion attack over the entire exposed surface, he stated. The problem of controlling corrosion of the underwater body is largely one of preventing the occurrence of pitting. Regular painting is the usual control.

Paints generally are not completely impervious to sea water under a hydrostatic head, he added, but even if water does get through serious trouble will not occur if the pitting tendency of the steel is mild. Of real concern to ship operators and builders are the more vigorous causes of pitting. These include physical conditions which may break down the paint and expose the steel, or an electrochemical effect so powerful that the paint film can not hold it in check.

Pitting corrosion may be due to stray electric currents generated on shore and led to the ship in the water, or to welding during outfitting which may be a source of stray currents. Pitting may also be due to galvanic currents resulting from dissimilar metals in the hull. The control of galvanic corrosion involves avoiding the use of dissimilar metals whenever possible.

Science News Letter, December 2, 1950

PUBLIC HEALTH

Fat People Have More Falls

➤ FAT PEOPLE have more falls and other accidents than persons of normal weight, Northwestern National Life Insurance Company finds. The company's Family Economics Bureau says that's one more reason for fat people to go easy on Holiday dinners.

"Fat is one of our greatest killers," the F. E. Bureau warns.

Fat kills in two ways: by promoting disease and by making various diseases more deadly. Examples, besides more frequent falls: More heart disease, more kidney trouble, more diabetes, far more cancer and three times as much high blood pressure among overweight people as among people of normal size.

Science News Letter, December 2, 1950

GEOLOGY

Erosion May Be Cause Of Submarine Canyons

➤ NEW evidence for the cause of submarine canyons—those deep-cut valleys in the ocean floor along the continental shelf—was offered by Dr. John C. Crowell, assistant professor of geology at the University of California at Los Angeles.

Speaking before the Geological Society of America meeting in Washington, he said that erosion processes operating below the surface of the sea are responsible.

Previously it had been held that the sea floor in ages past had been raised high enough to be dry land and had then been cut by rivers or glaciers. Later the land had sunk and had been covered by the sea.

Dr. Crowell has investigated several of the largest submarine canyons off the California coast. He has evidence, he thinks, to show that some of these canyons were formed in recent geological times.

"The canyons were probably eroded by the grinding action of sand and silt sliding down relatively steep submarine slopes," he said. "Some were probably eroded during the Ice Age when the sea level stood lower than today, but these too, I believe, were cut by similar submarine processes."

Science News Letter, December 2, 1950

BOTANY

Treated Onions Do Not Sprout During Storage

➤ A WAY to keep onions from sprouting during storage has been discovered by S. H. Wittwer and R. C. Sharma of Michigan State College.

The method consists in spraying the tops of the plants, while they are still growing, with a chemical called maleic hydrazide. When the plants were sprayed with a 2,500 parts-per-million solution of this chemical about two weeks before harvest, the onions did not sprout during five months in storage and there was considerably less loss from storage breakdown.

Flavor, color and odor apparently were not affected, the scientists state (SCIENCE, Nov. 17).

Similar results have been obtained with carrots and the method is now being tried on other commonly stored root crops such as sugar beets and potatoes.

Science News Letter, December 2, 1950

AERONAUTICS

England Building Five Different Helicopters

➤ FIVE different types of helicopters are being built in England, the latest being a British version of a 12-seater American craft. One purpose for which helicopters will be used is to serve cities too close together to be easily served by ordinary airplanes.

Britain, of course, is developing helicopters for the armed forces but has an unusual interest in the civil field. It pioneered the development of the helicopter as a passenger-carrying machine, and is at present operating the world's first scheduled passenger helicopter service with flights between Cardiff and Liverpool.

The country is geographically suited to a machine which can operate economically over short ranges, can fly at low speeds and land in nearby areas little larger than the machine itself.

Britain is building three large helicopters of different types and two small helicopters. In addition to the craft of American design, under construction is the Bristol 173, also a 12-seater. The Cierva Air Horse, now nearly ready for testing after an earlier failure test, is designed to carry 25 passengers and is one of the world's largest helicopters.

The Bristol 171 is a small helicopter of British design. The other British-built small helicopter is the American Sikorsky, which is called the Dragonfly in England. It has made a passenger-carrying flight across the English Channel and also has been used in city-to-city service between the centers of London and Birmingham.

Science News Letter, December 2, 1950

ASTRONOMY

Stars Flare Up

Geysers of flaming gases shoot out into space from five dying stars in heavens. Within a few minutes, stars may even quadruple in brightness.

By MARTHA G. MORROW

➤ GREAT GEYSERS of flaming gases are shot out into space not just by our sun, but by other stars in the heavens. So brilliant are these fiery outbursts that within a few minutes the stars double, triple or even quadruple in brightness, then in an hour or two again return to normal.

To date five stars have been discovered to flare up. One was caught in the actual act and the change in brilliance studied as it occurred. For another star, 50 such flare-ups within the past quarter century have been photographed.

No "new" stars or novae these, but tired old stars that flare up for a half hour or so as if to prove to the universe that there is some life left in the old things yet. On a bright star an eruption of this magnitude might be unnoticed, but these stars are so faint that such flaring geysers of blue-hot hydrogen gas markedly increase their total brightness.

Our nearest neighbor star, Proxima Centauri, has had 50 such flare-ups within the past 25 years, Dr. Harlow Shapley, director of Harvard College Oservatory, recently reported to members of the American Association of Variable Star Observers. Until this time less than a dozen flare-ups had been recorded on any one star.

"Proxima Centauri is a little cool star, presumably on its last legs before cooling off into eternal obscurity," Dr. Shapley said. "I have just found that it has brief spurts of radiant life during which it almost doubles in brightness," he reported.

Far Out in Space

This peculiar star, although our nearest star neighbor, is far out in space. Whereas it takes light from the sun, 93,000,000 miles or so away, only eight minutes to reach the earth, light from this red dwarf requires 4.3 years to come to earth.

Credit for being the first actually to observe a flare star and carefully measure its brightness with photoelectric equipment during the act of flaring goes to Dr. and Mrs. Gerald E. Kron of Lick Observatory of the University of California.

Within 15 minutes last year quite by accident, they saw the star flare to twice its normal brightness and fade back to near-normal brightness. The star is fainter, redder and smaller than our sun, a rather ordinary star, and Dr. and Mrs. Kron calculate that only a small hot spot about the size of the earth was involved in the outburst.

In order to cause the two-fold increase in light received from the star, they figure the amount of light emanating from the affected spot must have increased 2,000 times, its temperature rising from 6,000 degrees to 20,000 degrees Centigrade.

Other Flares Found

Less than two years ago a similar flare was found on the earth's second nearest star neighbor. At the time the star was discovered by Dr. W. J. Luyten of the University of Minnesota, who used photographs from Harvard's South African station, he noted within 20 to 30 minutes it flared up to ten times its normal brilliance, then subsided again. Seven other flare-ups have been spotted since by Harvard observers.

The first stars known to have such short periods of great brightness, stars that obviously were not double or novae, were discovered less than a decade ago by the late Dr. Adrian van Maanen of Mount Wilson Observatory. On each of two not-so-bright stars he spotted a single puzzling flare.

Bright clouds of hydrogen and calcium gases were identified in the atmosphere, surprising for stars of such low temperature. But his observations failed to indicate that the brightness was due to a small but violent outburst on the star!

The flare stars so far discovered are all reddish, very dwarf both in light and size. They are relatively cool bodies, with the atoms packed tightly together, and until these flares were discovered in a few near-by stars of this type, astronomers had supposed their light is dying out. Their radiation was believed to be decreasing slowly but steadily so that eventually they would entirely fade from sight.

But these blow-ups show there is life in the old stars. Bright hydrogen lines during the explosion appear in the spectrum of the star, but an hour or so afterwards the stars seem to be plugging along as usual with more or less normal spectra.

For decades pictures of these repeated flares on Proxima Centauri have lain unnoticed in Harvard Observatory files, awaiting discovery. About 15 years ago, Dr. Shapley recalls, he wondered if this star wasn't double, with one member eclipsing the other periodically. But no eclipses were detected when the star was studied closely and its light charted—only one discordant observation out of 70 bothered him.

Then early in October this year he again began to think of this near star and wonder if it perhaps was one of these new-found variables known as flare stars. A glance at his old measures, buried in the files, indicated that a flare-up really had occurred long before flares on stars were heard of. Examination of 592 plates in the Harvard collection showed 50 instances when the star brightened a bit, then rapidly returned to normal. From this Dr. Shapley realized that flaring is probably pandemic with such stars.

Flares on our own sun are not infrequent. The area near a sunspot sometimes suddenly increases in brightness to such an extent that within ten minutes it becomes much the brightest spot on the sun. Such flares never last more than a few hours and usually disappear almost as rapidly as they develop: that part of the sun soon looks much as it did before the flare appeared.

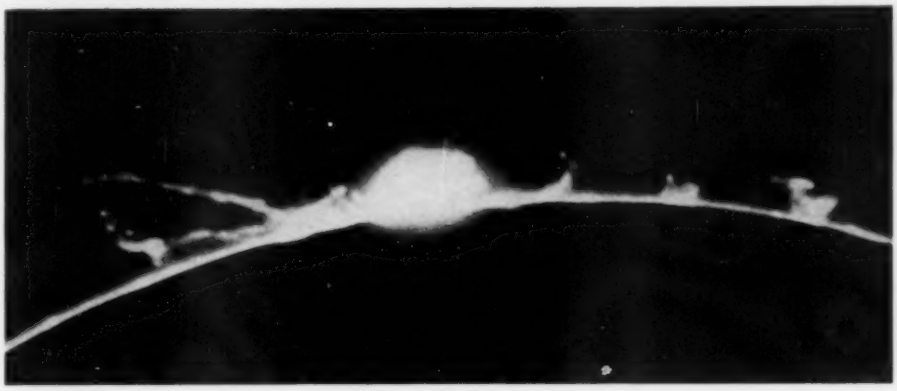
Tied in with Blackouts

These flares are of particular interest to us here on earth as they are often tied in with blackouts of shortwave radio broadcasts. Often when a sizable flare bursts forth on the sun, immediately shortwave radios "go dead."

Shortwave broadcasts may be completely blacked out over paths in the daylight side of the globe for the duration of the flare. The blackout is believed to be caused by a sharp increase in the ionization of the lowest layers of the radio roof due to a sudden flood of ultraviolet radiation from the sun.

Astronomers, now they know flares do take place on stars other than our sun and occur quite often, are wondering about their significance. What causes these ex-

DR. HARLOW SHAPLEY



SOLAR FLARE—Shown surrounded by prominences in this photograph of the sun's limb made at the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colo.

plosions or fiery geysers, they ponder. In what manner do they affect the surrounding space? And most important of all, do they affect us here on earth and how? Many more flare-stars must be found—and luck will have much to do with their discovery—before these questions can be solved.

Science News Letter, December 2, 1950

GENERAL SCIENCE

TV Channels for Education

Top educational groups urge that certain wavelengths be set aside for educational programs. Unlimited possibilities foreseen.

➤ SETTING aside certain of the limited number of available television channels for educational-type programs was urged by a joint committee of seven top educational groups.

These organizations banded together as the Joint Committee on Educational Television to present their views on education in television at hearings by the FCC.

With only a limited number of channels available for TV broadcasts, it is "imperative for the national welfare that the FCC take decisive steps now to insure that there will be at least one television channel for educational use in each large city and each important educational center," Brig. Gen. Telford Taylor, the committee's counsel, stated.

"There is only room for about 300 television broadcasting stations on the channels now available for this purpose. Of these, only 107 are now in operation and there are numerous competing applicants for the remaining 'slots'," he continued.

Gen. Taylor stated that television had virtually unlimited possibilities in medicine, in agriculture and in all phases of adult education and community extension work.

Educational groups sponsoring the Joint Committee on Educational Television include: The American Council on Education, the Association of Land Grant Colleges and Universities, the National Association of Educational Broadcasters, the Association for Education by Radio, the National Association of State Universities, the National Council of Chief State School Officers and the National Education Association.

Science News Letter, December 2, 1950

INVENTION

Ground Cotton Picker Salvages Droppings

➤ HALF the cotton now wasted, droppings from the plant to the ground, is expected to be salvaged with a machine recently invented which can be run through the cotton field after picking is completed to gather up this present waste.

Some 10% to 15% of the annual crop is now wasted, being dropped to the earth by the elements or in picking whether by machine or hand. Until now, no economical way has been found to salvage this waste. This new machine will gather up even partly or wholly buried cotton, it is claimed.

The machine is the invention of a Texas physician, Dr. William Rambo, assisted in part by Roy Hanna of the Oklahoma Tulsa Tribune. A patent has been applied for and is now pending. The machine is not yet in production but will be soon, it is expected.

The machine, 14 feet long, can be drawn through the cotton field by tractor, jeep or a pair of horses. It has a rotary drum three feet in diameter which is equipped with spring steel teeth that dig into the earth.

The teeth snag the cotton fibers and drag them up to a rotary brush which cleans the cotton from the teeth and throws it back into a receiving bin. Important to the machine is a tooth-harrow which loosens up the soil ahead of the rotary drum. The overall result is that good clean cotton is salvaged. All the droppings are not gathered but tests already made show that at least half of them are.

Science News Letter, December 2, 1950

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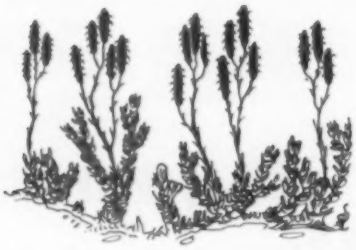
BOTANY

NATURE RAMBLINGS



Ground Pine

➤ IT LOVES to grow in the rich, mossy places, this curious little plant with its tiny, sharp-pointed green leaves, looking for all the world like an odd fairy pine tree. It is only a few inches tall, yet it has inordinately large cone-like fruit.

But the ground pine is not really pine. It is not even closely related to the common evergreen trees. It is more in the nature of a surviving great-great-great-granduncle, a black sheep in the family tree which gave rise to the conifers in dim ages long ago.

Ground pine is really a member of the fern family, belonging to that peculiar branch of the ferns known as the club-mosses. Its air of being a plant from another world is not entirely out of place, for it belongs by rights to the remote age when the world's coal was being made. Then its ancestors were proud giants, standing yards high where ground pine now stands inches, with trunks several feet around and leaves a foot long. The kinds of trees we know today did not exist then, and these were the stuff of primal forests.

But times changed, new climates came in, and the tribe of seed-bearing plants arose. The early aristocrats, these dinosaurs of the plant world, could not hold on. Only the dwarfs and the fingerlings of the ground pine family escaped, surviving by hugging the forest floor.

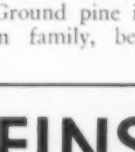
With its taller neighbors in the winter woods, however, ground pine now shares the honors of Christmas pageantry and decoration. Christmas wreaths in the shop windows are built pretty largely on a foundation of this fine green stuff with its needle-like leaves.

Like the holly it often accompanies, ground pine has suffered because of man's holiday spirit. It has long been over-used, and wide areas that once produced it in quantity have been stripped bare for the Christmas markets. Only mountain tops and reaches of country remote from the roads still have it in quantity.

For ground pine is extremely difficult to transplant and cultivate. It was a king of the forests once; now it struggles to survive. It is almost as if it looks back to its days of glory, refusing to be tampered with by man, a recent and puny force compared to the great changes in weather which made it what it is.

Science News Letter, December 2, 1950

EINSTEIN'S



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RADIO

Predict Short Wave To Stop Traffic Jams

➤ SHORT wave radio in automobiles may eliminate traffic jams of the future. Combine the radios with loudspeakers posted at intersections to provide audible signals, such as those that now guide airplane pilots, and traffic jams will be a thing of the past.

This is the prediction made by Dr. Theodore W. Forbes, associate professor of psychology and engineering at the University of California at Los Angeles.

Research to find ways to relieve the overtaxed eyes of airplane pilots, performed by Dr. Forbes at Harvard University, led him to this conclusion.

Beginning with the work done by Admiral Luis de Florez in 1936, in which it was shown that a pilot could fly a plane blindfolded with only two instrument indications given through his earphones, Dr. Forbes and collaborators studied the possibilities of converting the visual needle-ball-airspeed system into an audio system.

They experimented with tones, pitch and "chopped" signals—discovering that as many as four audio indications can be followed without interfering with ordinary radio and interphone communication.

The most successful signal was a three-in-one indication for turn, bank and airspeed which gave (1) a repetitive, sweeping type of motion of the signal from left to right, (2) apparent "tilt" produced by pitch variations and (3) a "putt" sound that could be associated with the sound of the plane's engine.

"Similar early warnings and information could be given motorists in complex traffic situations through their auditory sense," pointed out Dr. Forbes. "In addition to bigger signs, very short wave radio or loud speakers at highway junctions—such as have already been used by traffic police in some cities—could be used."

Whether or not the audio-signal system for motorists would eliminate the back seat driver, Dr. Forbes would not venture a guess.

Science News Letter, December 2, 1950

AERONAUTICS

Radio Contact Important In Safe Flying of Planes

➤ ALMOST constant radio contact between pilots in flight and government ground control stations is a prime factor in safe airplane transportation, it is indicated by figures released by the U. S. Civil Aeronautics Administration.

During the first eight months of the present year, over 4,000,000 radiotelephone contacts were made by CAA ground stations with pilots in the air. This is over three times the number of such contacts for the first eight months of 1949.

Another major service given by CAA communicators to pilots flying the 60,000 miles of airways is pre-flight briefing. This includes weather information, airport conditions, radio aids, terrain and minimum safe altitudes along the route. Some 1,225,000 such briefings were given pilots during the first eight months of this year, nearly twice as many as during the same period of the past year.

Science News Letter, December 2, 1950

CHEMISTRY

Perfection Not Needed For Crystal Growth

➤ PERFECTION does not lead to growth, at least in crystals, the Royal Society in London was told.

Slight imperfections, in the form of at least one dislocation per growing face, are needed for a chemical crystal to increase in size in supersaturated vapor, it is shown by researches reported by Drs. W. K. Burton, N. Cabrera and F. C. Frank to the British top science body.

Science News Letter, December 2, 1950

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MEDICINE

Malaria Cure

One of two common forms yields in practically 100% of cases to treatment with primaquine, derived from corn cob and coal tar products.

➤ ONE of the two common forms of malaria can now be cured in "practically 100%" of the cases by a new drug, primaquine, Dr. John H. Edgcomb of the University of Chicago announced at the joint meeting in Savannah, Ga., of the American Society of Tropical Medicine and the National Malaria Society.

Ability to prevent relapses in the vivax type of malaria is the important advantage the new drug has over other malaria remedies. When given alone, one out of five patients had a relapse. But when given with quinine, all of 33 patients recovered and had no relapses. Vivax malaria patients ordinarily may have eight to 10 attacks, or relapses, even when symptoms of the first attack have been suppressed and the patients have gotten over the attack.

Primaquine is not a "one-shot" cure. Treatment must be given under the supervision of a physician for 14 days.

Weight for weight, primaquine is four times as effective as any anti-malaria drug yet tested in the seven million dollar research program begun for the U. S. Government during World War II to find better drugs for treating malaria.

Primaquine is derived from the common corn cob and from coal tar products. It was first synthesized by Drs. Robert C. Elderfield and James D. Head of Columbia University, New York. It was tested first on animals by Dr. L. H. Schmidt of Christ Hospital, Cincinnati.

Trials on human malaria patients were made on volunteers from the convicts at Stateville (Illinois) penitentiary, under supervision of Dr. Alf S. Alving of the University of Chicago. U. S. Army and National Institutes of Health scientists also were on the research team that tested the chemical and established the effective dose for treatment.

Science News Letter, December 2, 1950

MEDICINE

Streptomycin For TB

➤ PATIENTS with tuberculosis of the lungs do better and get well faster when given 90-day treatment with streptomycin along with other treatment such as rest in bed and operations, the U. S. Public Health Service announced.

The announcement is based on findings reported from 14 groups of scientific TB fighters in various parts of the country, working in collaboration with the Public Health Service.

Careful controls were followed so that the scientists could be sure whether the improvement was due to the drug or to some other factor. Half of a group of 541 patients got streptomycin in the same dosage. All the 541 got the usual forms of treatment.

All patients were examined by X-ray, laboratory tests and otherwise at regular intervals for one year. The ones getting streptomycin soon began to show more improvement than those not getting the drug and continued to be ahead of the non-streptomycin patients all through the year.

Because of the careful controls during the study, there is "no question of the validity of the findings," Dr. Robert J. Anderson, chief of the Public Health Service's tuberculosis division, stated.

Details of the study are reported for the group by Drs. Esmond R. Long of Philadelphia and Dr. Shirley H. Ferebee of the Public Health Service in PUBLIC HEALTH REPORTS.

Science News Letter, December 2, 1950

PHYSICS

Predict Finding of New Particles of Matter

➤ NEW, STILL unknown particles of matter will be discovered within the next five years.

This prediction of the discovery of more of these minute, whirling bits of matter-energy of which all substances are composed was made by Dr. Karl K. Darrow of Bell Telephone Laboratories.

Outlining to the members of the American Institute of Electrical Engineers the elementary particles, such as electrons, protons, neutrons and mesons, that are now known and their properties, Dr. Darrow concluded:

"Five years hence the list may be much longer, for accelerators of greater and greater potency are being planned or are already being built, and who knows what extra particles they can create?

"Nor is there anyone who would dare to say that the cosmic rays do not have any more undiscovered particles up their collective sleeve," Dr. Darrow declared.

He defined an "elementary particle" as any particle of which the mass is not greater than a certain maximum value. "As this maximum value is the mass of the heaviest particle which is now regarded as elementary, you perceive that the definition is not a very rational one," he stated.

Science News Letter, December 2, 1950

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APPRENTICE JOE LEARNS CONSTRUCTION SAFETY—Bureau of Labor Standards—*Gov't. Printing Office,* 12 p., illus., paper, 10 cents.

THE BIOCHEMISTRY OF B VITAMINS—Roger J. Williams and others—*Reinhold,* 741 p., illus., $10.00. A survey of the progress of research on the biochemistry of B complex vitamins.

CENTER FIRE AMERICAN AND BRITISH PISTOL AND REVOLVER CARTRIDGES, Vol. II: Cartridge Identification—Henry P. White and Burton D. Munhall—*Combat Forces Press,* 143 p., illus., $7.50. A reference book.

CLEAN WATER IS EVERYBODY'S BUSINESS—Public Health Service—*Gov't. Printing Office,* 26 p., illus., paper, 20 cents. Graphic presentation of the problem, the objectives, and several suggested programs to aid in solving the problem.

THE GENERA *Chlorostilbon, Thalurania, Hylocharis,* AND *Chrysuronia:* Studies of Peruvian Birds. No. 58—John T. Zimmer—*American Museum of Natural History,* 31 p., 25 cents.

GENERAL CHEMISTRY: A First Course—L. E. Young and C. W. Porter—*Prentice-Hall,* 3rd ed., 608 p., illus., $5.65. An introductory college text.

THE H-BOMB—Stewart Alsop, Atomic Energy Commission and others—*Didier,* 175 p., $2.50. Many aspects of the H-bomb are discussed, such as its military value, its scientific basis, the political complications, and the scientist's role. Introduction by Albert Einstein. Commentary by George Fielding Eliot.

HORMONE ASSAY—C. W. Emmens, Ed.—*Academic Press,* 556 p., illus., $10.00. Biological and chemical methods of assaying hormones are presented.

HOW TO BUY, KEEP AND ENJOY YOUR CAR—Frank Mitchell—*Arco,* 176 p., illus., $2.00. A handbook for automobile owners and drivers.

INTRODUCTORY NUCLEAR PHYSICS—David Halliday—*Wiley,* 558 p., illus., $6.50. A textbook for graduate courses.

MAIZE IN THE GREAT HERBALS—John J. Finan—*Chronica Botanica,* 64 p., illus., $3.00. The story of the arrival of maize in Europe as reflected in the works of the Renaissance herbalists.

METHODS IN FOOD ANALYSIS APPLIED TO PLANT PRODUCTS—Maynard A. Joslyn—*Academic Press,* 525 p., illus., $8.50. A textbook stressing principles rather than practices.

NATURAL LANDSCAPES OF THE UNITED STATES—J. Francis MacBride—*Chicago Natural History Museum,* 47 p., illus., paper, 30 cents. A brief sketch of the natural botanical layout in the United States. Beautifully illustrated with black and white photographs.

NEGATIVE IONS—H. S. W. Massey—*Cambridge University Press,* 2nd ed., 136 p., illus., $2.50. A monograph revised to include some of the latest research material.

1940 E. W. SCRIPPS CRUISE TO THE GULF OF CALIFORNIA—by Charles A. Anderson and others—*Geological Society of America*—Memoir 43, 331 p. illus., $6.50. A report of this scientific exploration to determine the geologic processes which are or have been active in the Gulf. Maps are included.

100 BEAUTIFUL PIECES OF FURNITURE YOU CAN BUILD—Craftsman Editors, Popular Mechanics Magazine—*Popular Mechanics,* 160 p., illus., $3.00. Many helpful hints on how to build your own furniture.

PHILANTHROPIC GIVING—F. Emerson Andrews—*Russell Sage Foundation,* 318 p., illus., $3.00. A monograph on the new era of giving, a brief history of giving and much general information on fund-raising campaigns.

POPULAR MECHANICS RADIO-TELEVISION AND ELECTRONICS HANDBOOK—F. L. Brittin—*Popular Mechanics Press,* 160 p., illus., $2.50. Many helpful aids for both professionals and amateurs.

RADIO ENGINEERING HANDBOOK—Keith Henney, Ed-in-Chief—*McGraw-Hill,* 4th ed., 1197 p., illus., $10.00. Packed full of valuable data—charts, tables, circuits, diagrams and formulas.

SOURCEBOOK ON ATOMIC ENERGY—Samuel Glasstone—*Van Nostrand,* 546 p., illus., $2.90. Presents non-secret source material prepared at the instance of the Atomic Energy Commission. Introduction is written by Gordon Dean, Chairman, Atomic Energy Commission.

SPACE-TIME STRUCTURE—Erwin Schrodinger—*Cambridge University Press,* 119 p., illus., $2.75. The geometry of the space-time theory underlying Einstein's General Theory of Relativity.

STANDARD TIME THROUGHOUT THE WORLD—R. E. Gould—*Gov't. Printing Office,* Nat'l. Bur. of Standards Circ. 496, 30 p., illus., paper, 15 cents. Contains specific information on standard time. For the general reader.

THE STORY OF CALIFORNIA PHARMACY—George Griffenhagen—*American Institute of the History of Pharmacy,* 58 p., illus., paper, $1.00. A brief history.

SUPPLEMENT FOR 1949 TO CONSUMPTION OF FOOD IN THE UNITED STATES 1909-48—Bureau of Agricultural Economics—*Gov't. Printing Office,* U. S Dept. of Ag. Misc. Publ. No. 691, 41 p., illus., paper, 25 cents.

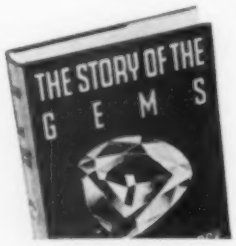
TEACHING SOCIAL STUDIES IN HIGH SCHOOLS—Edgar Bruce Wesley—*Heath,* 3rd ed., 594 p., $4.00. This revision contains the new developments in this field since 1945.

TELEVISION SERVICING—Walter H. Buchsbaum—*Prentice-Hall,* 340 p., illus., $5.35. Written for service technicians.

AN ULTRAVIOLET MULTIPLET TABLE: The Spectra of Hydrogen, Helium, Lithium, Beryllium, Boron, Carbon, Nitrogen, Oxygen, Fluorine, Neon, Sodium, Magnesium, Aluminum, Silicon, Phosphorus, Sulfur, Chlorine, Argon, Potassium, Calcium, Scandium, Titanium, and Vanadium—Charlotte E. Moore—*Gov't. Printing Office,* Nat'l. Bureau of Standards Circ. 488, Sect. 1, 78 p., paper, 45 cents.

A WORLD AIRLIFT: The United Nations Air Police Patrol—Elvira K. Fradkin—*Funk & Wagnalls,* 216 p., illus., $2.85. The author presents his idea for prevention of World War III.

Science News Letter, December 2, 1950



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WILDLIFE

Buffalo Herd Growing; Largest in Recent Years

➤ THE largest herd of buffalo in North America, descendants of shaggy monsters which once roamed the continent by the millions, now totals between 12,000 and 15,000 animals.

This count was made in Wood Buffalo Park in the Canadian Northwest Territory and Alberta Province. It is reported by W. A. Fuller of the Canadian Wildlife Service. (JOURNAL OF WILDLIFE MANAGEMENT, Oct.).

The bison herd at the turn of the century stood at only 300 members. In 1893 the Canadian government made it illegal for any one to molest the bison. A warden service was established in 1911, and the buffalo park was created in 1922.

The recent count of the buffalos, made by plane, is believed to be the most accurate census yet taken of the growing herd.

Science News Letter, December 2, 1950

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 547. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

⚙ *TELEVISION POINTER, which appears in white or black superimposed over the picture on the screen of the viewer, is operated by the commentator. It makes football plays easy to follow, or identifies a speaker in a group.*

Science News Letter, December 2, 1950

⚙ *WEATHERPROOF SPRAY for roofs and sidewalls is a Vinylite resin resistant to moisture, abrasion, most acid fumes and fire. It can be used to repair old roofs built up with pebbles, to seal cracks in new roofs before final coating, or sprayed on a felt or pitch roof.*

Science News Letter, December 2, 1950

⚙ *MICROFILM VIEWER magnifies about 10 times, is designed for the convenient reading of short lengths of film, a form in which many public documents are now recorded. This inexpensive small-size viewer does not cause appreciable eye strain.*

Science News Letter, December 2, 1950

⚙ *FLOOR CLEANER, to remove old varnish, shellac or wax in preparation for a new finish, is an organic liquid solvent which eliminates the need of a sanding machine. It is spread on a portion of the floor, rubbed in with steel wool, then wiped with a cloth.*

Science News Letter, December 2, 1950

Do You Know?

American capacity to mine *coal* is 30% to 40% above demand.

Brazil, the largest of the Western Hemisphere countries, includes half the area of South America.

An experimental factory ship is now used by a New England fishing concern; *fish* are sliced on shipboard as soon as caught and the fillets immediately frozen.

The powerful downdraft of a hovering *helicopter* was used to drive an escaped inflated raft, on which were two children, from choppy waters to the shore.

Ammonia is an important industrial chemical; it is a basis for many nitrogenous fertilizers and a raw material for dyes, pharmaceuticals, plastics and many other products.

Many Americans took *Geiger counters* with them on their vacations in the country this year, it is said; the object was prospecting for uranium as a side-line vacation activity.

⚙ *OVERALLS for the youngster, shown in the picture, are easy to put on and take off because they open all the way down the outside of each leg. Vinylite plastic lining used in them takes the form of a built-in panty that is both moisture and stain resistant.*

Science News Letter, December 2, 1950

⚙ *BARBERING APRON, for use to keep hair clippings from the clothes of the customer, is rectangular in shape but has a V-shaped opening extending downward at its upper end. The hems of the opening in this newly patented apron contain elastic cord to fit tight around the neck.*

Science News Letter, December 2, 1950

⚙ *INSULATED NAIL, for use in electrical wiring to hold two wires in place on a wall and hold them apart, is made of metal but has a hard plastic material covering head and part of the shank. This insulating plastic is capable of withstanding hammer blows.*

Science News Letter, December 2, 1950

⚙ *SEALING STRIP, to prevent water seepage around the wall edges of bathtubs and sinks, comes in a kit with a cleaning fluid, water-proof adhesive and a brush. The strip itself has a high-gloss white finish and is easily cleaned with a wet cloth.*

Science News Letter, December 2, 1950

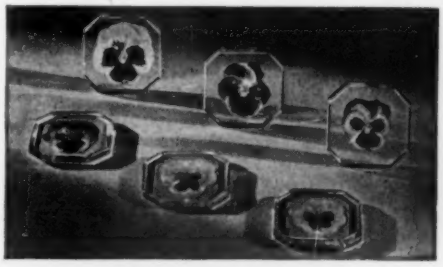
Coal tar is one of the most valuable raw materials of modern chemistry.

A coast-to-coast survey shows that black is the most popular color for *automobiles*.

The sickle-billed *hummingbird* of South America has a curved beak that enables it to feed on flowers whose calyxes are upright.

Korea is an important mining country, producing iron, tungsten, molybdenum, graphite, manganese, aluminum, cobalt, nickel, copper, lead, zinc and other ores.

A new steel 217-foot tower on the top of the high Empire Building in New York City to be used in *television* broadcasting, will enable receivers 50 miles away to pick up clear pictures.



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